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ABSTRACT

Using a developmental research model, this longitudinal study focused on the academic development throughout secondary education of participants in a Midwestern Upward Bound project. The study attempted to determine whether the participants collectively demonstrated significant gains in achievement as a direct result of involvement in Upward Bound and assessed whether the school input factors (facilities, quality of the educational process, individualized instruction, and expenditures for compensatory education programs) were significant determinants of program success and the academic development of the students. Findings indicated that the Upward Bound program has been successful in meeting its goals and objectives. Most participants made academic gains, persisted in secondary education, and graduated. Many participants aspired to and gained admission to postsecondary institutions. (Author/MK)

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A LONGITUDINAL STUDY ON THE ACADEMIC DEVELOPMENT OF SELECTED PARTICIPANTS IN A MIDWESTERN UPWARD BOUND PROJECT

by

Eric D. Young

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A thesis submitted in partial fulfillment
of the requirements for the degree of
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SPECIALIST IN EDUCATION THESIS

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has been approved by the Examining Committee for the thesis requirement for the Specialist in Education degree in the College of Education at the August, 1980 graduation.

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CHAPTER I

INTRODUCTION

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INTRODUCTION

Statement of the Problem

The following report presents a longitudinal study on the academic development of selected secondary education level students who participated in a Midwestern Upward Bound project.

This report is intended to trace the achievement development of these participants for the academic years 1977-78 and 1978-79. A one-year follow-up survey on former program participants is also included.

The general goal of this study is to measure the outcomes of a compensatory educational program and its effects on student learning, achievement, and academic success. (Jencks, 1969, Hanushek, 1972, Bowen, 1974, 1978).

The students reported in this study are participants in one of seven Upward Bound projects located in the State of Iowa. Upward Bound projects are secondary education-centered modules. A general purpose and objective of the programs are to facilitate academic achievement.

Purposes of the Study

The following report has the major purposes which are to:

1) trace the longitudinal academic development of the Upward Bound participants;

2) determine the effectiveness of the instructional methodology and educational objectives of this particular Upward Bound program;

3) provide a model of effective teaching strategies for academically underachieving youth from low socio-economic backgrounds;

4) provide a research model for future evaluations of the Upward Bound mission;

5) provide research that can be utilized to negotiate continued funding from federal and private sources for the continued support of compensatory educational programs;

6) provide a functional model for facilitating the entry of Upward Bound participants into post-secondary institutions.

A primary aim of the study is to set forth the model of one of the nations most successful Upward Bound projects. It is assumed through the research study to follow that other post-secondary institutions hosting Upward Bound projects will be able to utilize this research material to: a) strengthen existing projects; b) evaluate existing projects; and c) initiate new Upward Bound programs. The Upward Bound project under investigation in this study represents one of the original seventeen pilot projects sponsored by the U.S. Office of Education (DHEW) in 1965.

Historical Background

This Midwestern Upward Bound project for economically disadvantaged students is a component of the U.S. Office of Education's TRIO[1] programs. The following excerpt from the U.S.O.E. evaluation study provides background on the Upward Bound educational history:

---

[1]TRIO programs include USOE sponsored programs, Upward Bound, Talent Search, and Special Services projects.

> ,...Under authority of the Economic Opportunity Act of 1964, as amended (42 U.S.C. 2809) the Office of Economic Opportunity (OEO) funded 17 Upward Bound projects in the summer of 1965. In 1966, Upward Bound was authorized as a national program under Title II, of the Economic Opportunity Act. On July 1, 1969, the Upward Bound program was transferred from OEO to the U.S. Office of Education (USOE), Department of Health, Education, and Welfare. The present legislative authority is the Education Amendments of 1976 (Public Law 94-482).

Source: Executive Summary: RTI report #22U-889.

A secondary objective of this report will be to provide a regionalized study and evaluation of a Midwestern Upward Bound program. It is generally assumed through the research to follow that this particular project presented is representative of most Midwestern-based Upward Bound programs. One focus of the study is centered on educational process. The emphasis is on achievement and the academic development of Upward Bound participants. The educational process is an internal variable, therefore the educational model presented in this study may be applied toward similar programs.

Description and Overview of Program

The Upward Bound program is designed to reach low-income high school students who are diagnosed as demonstrating potential for successfully completing an educational program beyond the secondary school level. The typical Upward Bound student is an academic underachiever who is diagnosed as possessing potential abilities for success in post-secondary educational programs. These students are generally characterized by a lack of motivation, and under-preparation in basic academic skills. The intended goals and objectives of the program are

to generate the skills and motivation necessary for success in post-secondary education.

The program is legislatively mandated to facilitate success in secondary education and toward post-secondary education matriculation. Through the use of various intervention strategies such as counseling, remedial instruction, tutoring, exposure to a new or altered curricula, and cultural activities Upward Bound participants are encouraged to pursue post-secondary educational programs.

Summary

The TRIO programs came out of President Lyndon B. Johnson's anti-poverty legislation of the 1960s. The TRIO programs are components of the "Great Society" programs sponsored through the federal government for equal opportunity education in the United States of America.

Upward Bound and other TRIO programs eminate from the Titles (i.e., VI, VII, IX) under the 1964 Civil Rights Act, and the Education Amendments of 1972.

Specific goals and objectives of this study will be to:

1) trace developmental trends of high potential under-achieving students in a Midwestern Upward Bound program.

2) determine the effective achievement development of Upward Bound participants as a result of participation in the program.

3) ascertain and evaluate academic proficiencies and outcomes as a result of participation in the program.

4) provide a model for evaluation of the Upward Bound educational process through curriculum articulation.

5) evaluate new and developmental instructional techniques; such as mastery learning.

6) provide a framework for instituting an achievement assessment model from within the structure of the Upward program.

Definition of Terms

Economically Disadvantaged: -- any individual or family whose annual personal and gross income is below the poverty levels established in the U.S. census.

Academic Underachiever: -- any student or individual who is not producing at academic standards deemed appropriate for that persons achievement potential. In this study "high-risk" students are synonymous with academic underachievement.

Culturally diverse students (persons): -- in this study culturally diverse persons are ethnic minority, or non-white groups.

"New" students: -- in this study new students are synonymous with the non-traditional groups which consist of women, blacks, first generation college students, students from working-class families, and "other race" persons.

In this study the terms equal educational opportunity, compensatory education, and special services programs are used interchangeably to represent academic programs designed for the economically disadvantaged.

CHAPTER II

REVIEW OF RELATED LITERATURE

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REVIEW OF RELATED LITERATURE

Historical Synopsis: Equal Opportunity Education

Equality of educational opportunity as a modern social phenomenom was spurred on by the Civil Rights movement of the 1950s and 1960s. (Gordon, 1972, Cohen & Garet, 1975). The equality of educational opportunity for all citizens of the United States follows closely in the trends of development of systems of education in America. With the establishment of the Morrill Act of 1862 and the Second Act in 1872, America initiated its attempt to provide equal access to public education (Jencks & Riesman, 1969; Bowen, 1974; Jones, 1978).

The focus of this literature review is on the equality of educational opportunity in public education in the United States. Equality of educational opportunity for economically disadvantaged members of the United States is primarily a post-World War II phenomena. Following the war years the systems of public higher education in the U.S. began to evolve toward mass education for its citizenry (Jencks & Riesmann, 1969; Bowen, 1974).

With the institution of the Civil Rights Act of 1964 equality of educational opportunity gained a new focus on the national agenda concerning policy-making and civil rights. Confounded by federal law(s) policy-makers proceeded to institute measures mandated through legal

statutes, ensured equal access to public education for all members of society.

This addendum from section 402 of the Civil Rights Act of 1964 provided that the U.S. Office of Education should undertake a national survey on the status of public education in the United States; to wit:

> The Commissioner shall conduct a survey and make a report to the President and the Congress, within two years of the enactment of this title, concerning the lack of availability of equal educational opportunity for individuals by reason of race, color, or national origin in public educational institutions at all levels in the United States, its territories and possessions, and the District of Columbia.

Equality of educational opportunity as a national referendum on social policy eminates from educational policy instituted under the Kennedy Administration's focus on civil rights. Educational policy directed at achieving parity among all nationalities in the United States further developed under the social policies of the Johnson Administration with its emphasis on the national War on Poverty.

In 1964, the Congress initiated legislation which culminated in the Elementary and Secondary Education Act of 1965 (ESEA). The stated purpose of the ESEA was to improve the scholastic achievement of economically disadvantaged children and adolescents (Hodgson, 1973; Cohen & Garet, 1975; Rein & White, 1977).

The ESEA of 1965 was the modern precursor to the development of programs aimed at extending educational opportunities. Policy-makers accepted the notion that equality of educational opportunity constituted "fairness" in access to educational opportunity (Jencks, 1969, 1972; Mosteller & Moynihan, 1972).

The federal policy on education that developed in the 1960s was founded on the notion that early childhood was the critical time for intervention with measures of educational opportunity. Public policy and programs instituted under the ESEA of 1965 emphasized comprehensive educational programs for economically disadvantaged children.

Title I, of the ESEA was aimed at providing funds for local school districts to equalize the resource inputs of educational systems. Title I represented an innovation and major reform in educational policy in the United States (Cohen & Garet, 1975, p. 29). One of the most popular programs to eminate from this legislation has been Project Head Start.

A direct outgrowth of the 1964 Economic Opportunity Act and the ESEA of 1965, was the establishment of programs aimed at the economically disadvantaged in secondary education. Federal educational programs such as Project Upward Bound and Talent Search were established as pilot projects in the summer of 1965. These programs were aimed at raising the levels of academic achievement of economically disadvantaged children and youth between the ages of 16 and 27. The Upward Bound program in particular constitutes the central focus of this thesis.

One of the most important research efforts undertaken pertaining to the access of equality of educational opportunity was the survey by sociologist James S. Coleman and others in 1965 under the auspices of the Johnson Administration. Coleman et. el., set forth to overview the state of the national system of public education in the United States.

Congress intended the study to become a tool for opposing formal discrimination in educational opportunity. The "Coleman Report" of 1966, was intended to serve three fundamental purposes: 1) to provide an accurate description of resource inputs for six different racial groups in elementary and secondary schools; 2) to provide an accurate description of levels of achievement of each of these groups at three points in elementary school, grades 1, 3, and 6, and two levels of secondary school; 3) to provide the basis for the analysis of the effects of various inputs on achievement (Coleman, et. al., 1966).

A premise of the Coleman report assumed that the educational "inputs" determined educational "outputs." The report assumed upon its institution that educational advantage was not consistent throughout the nation (Mosteller, et. al., 1972, p. 6).

Historical Overview of Compensatory Education

Compensatory educational programs for the economically disadvantaged are an outgrowth of legislation under Title I legislation of the ESEA of 1965. The term "compensatory" implies a remuneration, or "making up for lost ground" approach to educational opportunity. The vast majority of Title I funding is earmarked for elementary and secondary education. Eligibility for these funds by state and local school districts is dependent upon the socio-economic status (SES) of the communities served.

Mosteller (1972) reminds us that the Coleman survey (EEOS) was directly responsible for the proliferation of compensatory educational funds. The Coleman survey was one of first attempts at conducting a

full-scale national survey of education in the United States. It must be remembered that the focus of the report was that of a survey and not an experiment.

The Coleman report utilized social level variables in its analyses and assessment of educational opportunity in the United States. These variables consisted of the following demographic data: 1) schools' physical facilities, 2) students' access to books, 3) school curriculum, 4) family background, 5) socio-economic status, 6) expenditures, 7) teachers' background and training, 8) regional and cultural characteristics, 9) type of communities, and 10) ethnic origin of members of society (Coleman, et. al., 1966).

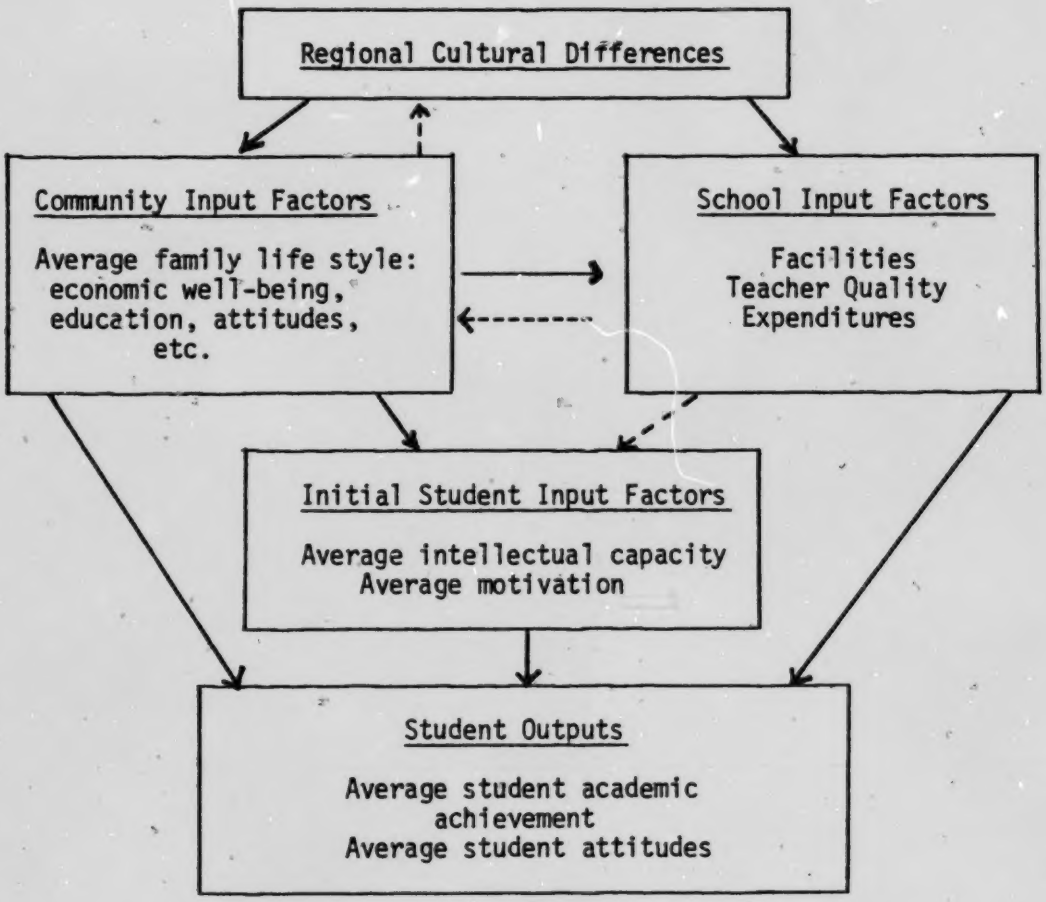
Coleman tested 570,000 students and evaluated over 60,000 teachers. Equality of educational opportunity was measured in terms of school inputs such as physical facilities, training of teachers, and racial mixture. The output measures consisted of relative levels of academic achievement, retention rates, college attendance, and occupational follow-up (Hanushek, 1972).

One of the primary criticisms of the Coleman survey in the literature that followed its publication, was its over emphasis on input factors at the expense of the measures of outputs. One of the most interesting findings of the Coleman survey was that the variables of social and economic class were the most important determinants of equality of educational opportunity. Some of these variables included the parents' level of educational attainment, parent's occupational status, and family income. A strong conclusion of the analysis was

that, "the achievement of lower-class students both black and white was fairly strongly related to socio-economic levels of their classmates" Coleman, et. al., 1966, Jencks, 1979, p. 71).

One criticism of Coleman's study came from economist David J. Armor (1972) who pointed out that Coleman's data contained many methodological inconsistencies. Armor (1972) set forth the following model of the aggregate educational processes:

Figure 1. A Model of Aggregate Educational Processes



Source: David J. Armor; "School and Family Effects," (1972).

One of the more important criticisms was that the data included small numbers of minority group children other than blacks. More critical was an analysis and follow-up done by economists Hanushek and Kain (1968) that showed radically different outcomes of the data when different statistical methods were applied. This reassessment concluded that school facilities do make the difference in achievement levels and that social level variables such as family background etc. account for relatively insignificant differences.

In 1969, Jencks forwarded a report to Congress reassessing the effects of educational inequality in the United States. Jencks set forth to judge the quality of schools by their long-term effects on students. The emphasis was on whether the evaluations had shifted from input variables to an emphasis on the measures of output.

Some of the major conclusions of the Jencks survey were that, in the mid-1960s 94 percent of all students spent at least a year in high school and 80 percent graduated. Jenck's report also found that, in the mid-1960s 34 percent of all blacks left high school without graduating, compared to 16 percent of whites. Similarly, whites from working-class homes were more likely to leave school than whites from middle-class families (Berdie & Hood, 1965). During this period it was estimated that blacks received 10 percent less schooling than whites. Blue-collar children generally spend 13 percent less time in school than children from white-collar families. In addition, the average parental incomes of blue-collar families were found to be 26 percent lower than middle-class families.

In the study; Inequality, reassessed the variables of family background, academic achievement, access to more priviledged classmates, family socio-economic status, school facilities, and school curricular offerings.

Concerning the amount of funds allocated for school expenditures Jencks, concluded that, "it is important that poor and black children get their share of the nations resources while they are children" (1972; p. 27). He noted that educational interventions appear to be most critical at the earlier levels of schooling, and, that through allocations, public money should be more equitably distributed.

Jencks suggests that high school students not be segregated by curriculum according to educational ability. It is his contention that grouping students into curriculums such as college preparatory curriculum, technical curriculum, general curriculum, etc. has a noticeable negative effect on achievement and post-secondary educational aspirations.

Persistence in secondary schools is an extremely important variable in determining future life chances and opportunities for individuals (Berdie & Hood, 1965; Jencks, 1972, 1979). Jencks takes the position that:

> We, tentatively concluded that if students leave school early in adolescence, their verbal and numerical skills do not develop as much as if they remained in school.

Major longitudinal research studies show a strong correlation between levels of income and educational attainment. Jencks concludes

that an upper middle-class family earns 28 percent more income than average families, and working-class families earn 28 percent less than average families.

Therefore, it is concluded that children from upper income levels can expect to earn 70 percent more income than those from lower levels. On the effects of income levels on educational attainment of individuals, Jencks states that, "staying in school is not enough, finishing is what is important" (1972, 1979).

It appears that many of the conclusions reached through research from the Harvard Studies: 1969-1972 support compensatory educational programs. In terms of well-to-do and high-achieving adolescents, Jencks (1972) and Bowen (1978) concur that educational attainment by individuals represent a substantial investment in human capital for individuals and society. Bowen (1974) estimates the return on a college education to be in the arena of 8 to 14 percent over a lifetime. Concerning education, Jencks (1979) concludes that, "persons with a lot of schooling tend both to work in much higher status occupations and to earn more money than persons with less schooling." Four years of high school is associated with a 40 percent income increase over the group not completing high school. The basic premise of compensatory educational programs is to equalize these advantages to all members of society.

The Kalamazoo Studies support this contention, as they concluded that:

> Economic benefits of schooling depend upon the level of schooling, the measure of economic success, and the population studied.

The Jencks (1972) report on equality on educational opportunity has not been without its controversial aspects. Many minority educators have attracked Jencks' basic conclusions as being "establishment" oriented.

Perhaps the most critical element of the report on inequality concluded that, "schools make little difference on relative success and "outcomes" in terms of advantage in American society. Jencks' contention was that family background is the key determinant of success in America (1979). Compensatory educational programs are aimed at social reform measures. Many educators feel that the demand for accountability from these programs applied policy research to the wrong variables (Rein & White, 1973).

Wright (1973) et al., contend that the conclusions from Inequality serve to take school officials "off the hook" for accountability in public education. Minority group educators contend that compensatory educational programs will not work if policy doesn't make school officials responsible for teaching in the ways children are prepared to learn.

Wright, et al., cite the Michigan State Department of Education studies as indicators of the positive effects of compensatory education. The Michigan studies show a clear pattern of strong pupil achievement by schools funded under Title I allocations (refer to: Michigan State Dept. of Education addendum, 1972 Education Amendments, Section 3).

Service Delivery Systems

This section has three purposes. First there is a need to highlight some historical antecedents of special service delivery systems in public education designed for economically disadvantaged persons. Second, there is a need to overview, define, and evaluate some special compensatory educational programs for the college-bound student; in terms of counseling services, and Third, a need exists to summarize research studies pertainent to the Upward Bound program.

The College Entrance Examination Board (CEEB) has been a long-time supporter of equal access to higher education in American society. During the 1950s the CEEB sponsored national demonstration projects and developmental programs for minority groups (Hanford, 1976). The CEEB continues to provide many services to academic support programs designed for the economically disadvantaged. Programs such as the National Scholarship Service For Negroe Students (NSSFNS) is an example of the types of educational services provided through this agency. The NSSFNS student locator service was aimed at identifying talent among economically disadvantaged students. Hanford (1976) notes that since 1955 the CEEB has also offered a clearinghouse on non-white concerns. Some of these services include a minority consulting service, supports for summer administrations of the Preliminary Scholastic Aptitude Test (PSAT), and present films and publications on minority concerns. Both the American College Testing Program (ACT) and the CEEB provide fee waivers for test administration to economically disadvantaged students; and financial aids processing materials through ACT free of charge to Upward Bound programs and similar agencies.

The CEEB has long taken the position that the major barriers to access to higher education by economically disadvantaged students are lack of financial support. Hanford (1976) extends the following statement on financial support and equal access to education for economically disadvantaged youth:

> In the assignment of funds to those students designated to receive financial aids, the largest amounts of total grant assistance should go to students with the least ability to pay.

In a 1975 policy statement, the CEEB, outlined the following principle concerning equal access to education:

> Deep rooted cultural, educational and economic disadvantages constitutes formidible barriers to post-secondary education for most of the nations minority youth. True equality of access can be achieved only by the integration of social and cultural differences, among the majority and minority alike, by the provision of equal educational opportunities at the primary and secondary levels, and by the removal of economic barriers to college study.

Major Research Studies

Project Upward Bound, as discussed in the introduction of the report, is a federally sponsored educational program designed specifically to reach economically disadvantaged students in secondary education. Upward Bound programs are located within the structure of post-secondary institutions and serve as outreach programs to this clientele.

The purpose of this section is to focus on major research studies concerning the evaluation of Upward Bound programs. This focus is longitudinal and taken primarily from the U.S. Office of Education (USOE) sponsored evaluations undertaken by the Research Triangle Institute in 1977 and 1979.

The purpose of the USOE evaluative studies was to assess the long-term outcomes of the special educational services designed to reach low-income students in secondary education. The emphasis of the studies were to measure the programs impact on educational expectations, progress, and the persistence of its participants. In terms of progress and persistence, the suggested program impact seems to be focused at the transition step between high school completion and post-secondary entry (RTI, 1977, p. 3).

The input variables of Upward Bound are designed to be longitudinal. Input variables are the age of individuals upon entering the program, the year or level in secondary education, the amount of special developmental and remedial education received, and the quality and quantity of guidance received.

The USOE 1977 report emphasizes that the program's impact is incremental in nature. The more years of participation and program exposure, the more successful the outcomes among participants. Two to three years participation in the Upward Bound program is recommended for the most significant impact.

The 1977 USOE evaluative study indicates clear-cut differential patterns of post-secondary entry for participants vs. non-participants. Former program participants enter four-year institutions, institutions with more attractive financial aids packages and policies, and those institutions hosting Upward Bound projects than the non-participant group of similar students.

Eighty-one percent of Upward Bound participants complete secondary education, while 80 percent of the non-participants complete secondary education. The research indicates that 64 percent of former program participants enter post-secondary education while only 49 percent of the non-participant group who graduated high school entered post-secondary education. After a two-year follow-up study, it was found that 40 percent of the participant group completed two or more years of post-secondary education. Of the non-participant group only 29 percent completed two or more years of study. The conclusions drawn from the research clearly indicates a greater degree of persistence by former program participants than non-participants in post-secondary education (RTI, 1977, p. 4).

The most critical year of participation in the Upward Bound program is the twelfth grade year. The placement function of the program is its most relevant measure of successful outcomes. The major purpose of the program is to facilitate the entry of its clientele into post-secondary education. The Upward Bound program should strive to recruit at least 60 percent of its entering class at the sophomore level of secondary education. Hanford (1976) recommends, that the sophomore year of secondary education should develop an emphasis on career education, and guidance programs for students.

In summary, the following conclusions represent a summation of the major research findings from the first USOE (1977) evaluation study:

1) Educational expectations. A greater percentage of former

program participants (55 percent) were expected to complete at least a four-year college education than were non-participants (40 percent), and expectations were generally higher given longer participation in the Upward Bound program.

2) High School completion. In general former Upward Bound participants, demonstrated no greater high school completion rates than non-participants.

3) Post-secondary entry rates. Within each of the three grade cohorts, the overall post-secondary entry rate for former Upward Bound participants was greater, by almost twenty percentage points, than that for non-participants.

4) Types of individuals entering post-secondary education. Among Upward Bound participants, the proportions of ethnic minorities, males, poverty status individuals, and academic risks in the post-secondary entering subgroup coincoided with the analogous proportions of the total participant population. Among the post-secondary entering subgroup of non-participants however, all of these groups were underrepresented.

5) Types of post-secondary institutions entered. A greater percentage of former Upward Bound participants (66 percent) reported attending four-year institutions than did non-participants (51 percent).

6) Overall educational progress. The overall educational progress of former Upward Bound participants is greater than that of the non-participants and is greater with longer participation in the program.

Counseling and Guidance

The purpose of this section is to emphasize the importance of guidance programs for economically disadvantaged students.

Delaney (1977) states that, "one of the most important ingredients in academic remedial programs is the counseling function." However, counseling and guidance programs for economically disadvantaged persons represents a problem area. As Hodgkinson (1977) notes, there are very few programs that train college faculty and counselors for remedial work and guidance with non-traditional youngsters.

In an extensive study conducted by the Maryland State Department of Education (1974) the following conclusions were drawn concerning the economically disadvantaged and counseling:

1) All states should develop provisions and guidelines for policy on counseling of minority and "other race" students.

2) Students should select post-secondary institutions by curriculum and offerings, rather than racial composition.

3) Counseling for post-secondary opportunity for minority and "other race" students should be augmented in secondary schools.

In sum, the counseling and guidance function in project Upward Bound should emphasize career awareness, interest assessment, and vocational planning. Guidance toward post-secondary education is perhaps the central mission of the program.

Remedial and Developmental Education

The objectives of this section are to outline theories on educational processes, and 2) to overview the role of evaluation in regard to compensatory educational programs.

Edgar Epps (1977) notes that trends toward mass education and educational opportunity in America have incorporated large numbers of non-traditional students into higher education. Large numbers of these students are from low socio-economic backgrounds. The intentions of the egalitarian movement in higher education was to facilitate the entry of lower socio-economic persons into the mainstream of occupational society.

Epps feels that, "educational attainment has the greatest bearing on occupational success." He further contends that the goal of higher education is developing individual potentials.

Remediation in the educational process is most effective in the earlier years of schooling. The 1966 Coleman Report indicated that economically disadvantaged youngsters fall behind their more advantaged peers at all levels of schooling. This being the case, it seems apparent that remediation through compensatory educational programs is necessary to the process of equalizing education opportunity.

Evans (1977) contends that students who receive compensatory assistance in reading tend not to fall behind their less needy unassisted peers in their reading skill performance during the school year. In addition, further research indicated that compensatory assisted students tend to develop favorable attitudes toward themselves as readers and toward their reading activities to a degree that is equal to or greater than that of their less needy or unassisted peers.

Educator Robert Worthington (1977) notes three main problems areas in academic proficiency of economically disadvantaged students concerning post-secondary level education. There concerns are:

> 1) At the secondary level of education, culturally diverse students are characterized by: a) poor academic preparation in high school, lower standards of achievement, less competition, deficiency in verbal skills, reading, writing, standard English expression, math, foreign languages and success;
>
> 2) Poor study habits, and weak learning skills produce students less capable of dealing effectively and adequately with post-secondary subject matter;

3) Predictable social psychological problems associated with adjustment to the post-secondary atmosphere.

Evaluation of Programs

The evaluation of compensatory educational programs should be concerned with both input processes and outputs. Evans (1977) notes that the evaluation of compensatory educational programs is mandated under section 151 of Title I; of the ESEA of 1965. Evaluation of these programs have two fundamental objectives. The first is evaluation by federal agencies; such as the U.S. Department of Education. National studies are necessary to account for the approximately $949 million to $2 billion spent on remedial educational programs annually. Secondly, local institutions and state agencies are also responsible for local progress studies.

Evans contends that educational evaluation studies should focus on outcome measures. Estimating academic growth in the constituents of compensatory educational programs is the fundamental purpose of both internal and external accountability.

Spuck (1969) provides a model for evaluation of a compensatory college level program aimed at culturally diverse students. The program consists of special directed studies for transition of economically disadvantaged to post-secondary education. The project format consists of a five-year experimental program. No records or grades are kept in this program. Its students are provided academic counseling and financial support. The method of evaluation consists of a pretest, posttest design; through the use of achievement assessment instruments.

The rationale of this program design is to measure changes in the students academic proficiencies during the program, and factors associated with those changes. The evaluation measures consist of: 1) Grade point average in the first year of college; 2) securing an adequate financial aids package; 3) acceptance as a regular student in other accredited four-year colleges; 4) external judgments of success in the program by faculty members; and 5) making a career choice.

This evaluation model is included in this review for its correlation to the Upward Bound "bridge" component which emphasizes college preparatory functions.

Evaluating pupil growth

The assessment of economically disadvantaged clientele in compensatory educational programs poses special problems. Evans (1977) makes the point that, in terms of estimating the educational growth of economically disadvantaged students, two strategies are necessary. First, standardized tests utilizing national norms and scores of local children similar to those served by the program should be used. Secondly, for purposes of overall effectiveness, children with scores dissimilar to economically disadvantaged students should be utilized on a comparative basis to estimate gains in overall achievement. Evans notes the fact that special concerns are associated with the assessment of economically disadvantaged students:

> Standardized achievement testing modules cannot accurately assess teen-age academic development

> due to underachievement in basic skills of reading and mathematics; many times these populations will fall into primary grade levels.

Williams (1975) and other minority educators have cautioned of the dilemna of assessing culturally diverse and ethnic and minority children with standardized achievement instruments. Many times the internal biases of such instruments will disfavor students of low socio-economic backgrounds. Individualized learning and assessment is perhaps an answer to the testing dilemna.

Ahman and Glock (1975) note that in determining pupils' overall progress, grade equivalents should not extend beyond the junior high levels of education (i.e., K-8). They note that, for any students, "no continuous and systematic instruction are used at the secondary levels of education" (Ahman, et. al., 1975, p. 213; Cronbach, 1970; Isaac, 1971; Anastasi, 1976).

Ahman et. al., suggest that in attempting to estimate growth and achievement, evaluations from many sources are necessary. The strategy in the use of norm-referenced testing should be to strengthen the instructional program and determine overall pupil progress. Survey batteries of the criterion-referenced nature should be used to identify areas of individual and group strengths and weaknesses. Diagnostic profiles for each individual student serve these purposes well. Ahman, et. al., recommend that educators should facilitate pupil progress in terms of readiness with evaluation based on individual achievement.

Instructional Methodology

The objective of this section is to highlight some major theories pertaining to instructional methods utilized in the educational process.

Bloom (1977) and others contend that educators should move away from the notion that ability is normally distributed in a bell-shaped probability curve, and that all of our students can do excellent work if provided the requisite opportunity for individual achievement (Bruner, 1962, 1966; Cross, 1971, 1976; Block, 1975). Delaney (1977) concurs on this issue, when he states, "as we increase the amount of time that is available to remedial education we increase the probability of success."

Bloom (1971) contends that, by organizing instructional programs properly, the students will be operating at very high standards of academic excellence.

Mastery learning

Bloom (1971) believes that most pupils can master what we have to teach them if they receive the kind, quality, and amount of time for learning to meet their needs. Bloom proposes the learning strategy that instructional materials should be broken into small learning units, or sequential mastery stages. And, that formative evaluation will provide continuous feedback on pupil growth and progress. He takes the position that grades and quality points are not central to the mastery mode of learning.

Ahman (1975) suggests that, "for pupils who lack mastery of a particular unit, formative tests should reveal the particular points of difficulty, the specific ideas, skills, and processes they still need to work on."

Through the instructional goals of mastery learning it is assumed that 80 to 85 percent levels of attainment are considered standards of mastery for any subject matter (Ahman, et. al., 1975; Bloom, 1971; Block, 1975). Summative evaluation methods are central to this process. The summing up of the pupils' achievement over the entire course, or some substantial part of it is necessary to an overall evaluation of academic achievement.

Proponents of mastery learning techniques make the claim that it improves the self-concept and mental health of the pupil. (Block, 1971) Mastery learning is best utilized in situations or learning areas whose content is stable, and where the emphasis is on convergent rather than divergent thinking (Bruner, 1962; Bloom, 1971; Ahman, 1975). Bloom (1971) concludes that non-grading is in tune with the realities of individual differences and provides for both the slow moving student and the high achiever.

One of the most widely respected educational theorists in America is Jerome S. Bruner. In his theory of instruction, he takes the position that, "the final goal of teaching is to promote the general understanding of the structure of a subject matter." His theory of instruction stresses the importance in learning of forming global concepts, of building coherent generalizations, and creating cognitive gestalts.

Bruner (1962, 1966) contends that learning based on structure is more long lasting and less easily forgotten; which will promote increased academic proficiencies in students. Bruner (1962) sets forth four principles of learning:

> First principle: Motivation: Almost all children have a built-in "will to learn" and a drive to achieve competence, through intrinsic motivation.
>
> Second principle: Structure: Any given subject area, any body of knowledge, can be organized in some optimal fashion to be transmitted to, and understood by, almost any student. The mode of presentation is important.
>
> Third principle: Sequence: The extent to which a student finds it difficult to master a given subject depends on the sequence in which the material is presented.
>
> Fourth principle: Reinforcement: In order to achieve mastery of a problem we must receive feedback on how we are doing.

Bruner notes that the key to positive classroom learning may be found in an applied approach. He suggests that Learning Sets should be utilized which concentrate on solving problems. Distributive learning processes in sequential spaced learning periods facilitates more effective learning. Learning curve theory posits the notion that learning speed involves students in this manner:

> When confronted with new subjects and material, students learn a great deal of the material in a short period of time, with increased practice, add less and less new learning.

In sum, learning curve theory is a model relevant for differentiating styles of learning as well as individualized instructional methodology. It appears to represent a very useful model of instruction for use in work with the culturally diverse student. This model presented

on mastery learning has been used very effectively in non-graded schools and curriculums.

Cognitive Style

Educational theories that emphasize cognitive style in reference to learning and academic achievement are relatively new models of instructional methodology developed in the last quarter century.

Cross (1971) notes that the American post-WW II move toward mass education has brought a new clientele to higher education. Cross terms this non-traditional clientele as the "New" students of the 1970s. These New students have special learning, developmental, and emotional needs. Cross notes that this new clientele may be characterized by educational problems in the traditional academic frame of reference.

The New students are two-thirds first generation college students, 50 percent caucasian, 30 percent black, and 15 percent other minorities. In many instances females are considered as New Students to post-secondary education also. Generally, New students are persons who occupy the bottom half of their high school class; many are academic underachievers. Most of these older adolescents are in need of both remedial and developmental education.

Cross (1976) notes that educational problems among New students are not color-bound. The New students often times are characterized as being the "high ability sons and daughters from blue-collar families." The primary need of this group is financial assistance.

Contemporary educational theorists recognize the fact that we must expand the dimensions of how talent in persons is measured (Cross, 1971, 1976; Sprinthall, 1971, 1976; Exum, 1977, 1979).

Cross (1976) suggests that culturally diverse children tend to have special learning needs. These children and adolescents are characterized by what Cross terms field dependency. The field dependent individual has mental characteristics that facilitate a more global way of perceiving the total field or environment. These persons tend to require more structure in learning situations; more counseling and guidance; and respond better to mastery learning techniques as a function increasing the amount of time to complete academic tasks. In contrast, the field independent individual approaches and perceives situations in a more analytical frame of reference. For example, field independent students excel at academic subjects that require analytical cognitive processes. Subjects such as mathematics, natural and physical sciences, or quantitative skills fall into this category. Field dependents tend to excel at the verbal related academic skills, but field independents are also competitive in this catagory as well. Educators note that the traditional systems and curricula in American schools favor the field independent learning mode; and cognitive style.

Sprinthall (1971) has developed a model of learning which he designates as Deliberate Psychological Education. This model attempts explicitly to develop identity formation in secondary school students.

Exum (1979) has applied this model to include identity formation and human development in culturally diverse students.

The learning needs of culturally diverse students can be further characterized along the dimensions of behavioral style. In the deliberate psychological education model Sprinthall (1976) and Exum (1979) note that Afro-American students in particular may be characterized by a synthetic-personal style of learning and human development. The synthetic-personal behavioral style of human development is perhaps synonymous with Cross' dimension of the field dependent cognitive style. In the synthetic-personal behavioral style persons tend to perceive themselves as an integral part of the phenomena which is being observed. Exum (1979) notes that these types of persons tend to be more relationship oriented and more expressive verbally.

In contrast to the synthetic-personal style; an atomistic-objective behavioral style is characterized by patterns of analysis that involve attempts to break down experiences into component parts. These type of persons catagorized under the atomistic-objective behavioral style tend to be independent learners that are more characteristic of the traditional students in education. This atomistic-objective person is perhaps synonymous with the cognitive style of the field independent individual.

The theories of cognitive and behavioral differences in learning styles provide new insights and innovations in instructional methodology.

Sprinthall (1980) contends that educators should concern themselves with academic achievement and student development in the earlier years of schooling preceding post-secondary education. Sprinthall calls for new modes of educational processes that involve resetting the curriculum, academic programs, and instruction. In short, new ways to teach old content. Some of Sprinthall's suggestions are: 1) promotion of psychological maturity; 2) small groups; 3) using pupils as resources; 4) open-ended discussion in classes; and 5) creation of positive sensitive interactions between teacher and pupils.

These innovative theories on learning through cognitive and behavioral styles are important to providing new methods of teaching in the 1980s. For example, Riesman (1970) presents a theory of instruction that relates to individual styles of learning. In his evocative mode of instruction positive classroom interaction and verbal expression is encouraged between instructor and pupils. In the didactive mode of instruction materials and subject matter are presented in a lecture-style format. This has been the predominant mode of instruction in American educational systems. We must now begin to recognize individual learning styles and tailor our instructional methods to meet the needs of a more diverse body of students.

In the theoretical format of Bloom (1972) restructuring the traditional curriculum to recognize and facilitate individual learning styles is necessary. It will ultimately promote positive student development and academic achievement in both the cognitive and affective domains.

Toward Post-Secondary Education

This final section is intended to focus specifically on equality of educational opportunity in post-secondary education. The emphasis is on access. The objectives of this section are to present research pertaining to access to post-secondary education for Upward Bound students, the admissions process, college enrollment projections in the 1980s, and some academic concerns of the contemporary college student.

The second USOE evaluation study on the Upward Bound program was conducted between April 1978 and September 1979. The purpose was to investigate the long-term educational outcomes concentrating on the post-secondary experiences of former program participants. The report's objectives were to focus on persistence, progress, performance, and other relevant educational outcomes.

This report focuses on program impact and the transition step between high school completion and post-secondary entry. The report concentrated on participants and non-participants of the Upward Bound program. The results indicated that longer exposure to the program the more likely the probability of successful educational outcomes.

The study indicated that of the participant group, 91 percent entered post-secondary educational programs; 9 percent did not. Twenty percent of the participant group completed four years of post-secondary education to graduation. Of the matched non-participant group, 72 percent entered post-secondary education; 28 percent did not. Five percent of this group persisted and graduated from a four-year institution.

These results indicate that typical Upward Bound participants enter four-year institutions at considerably higher rates and persist to graduation than similar students in the non-participant group.

The conclusions reached from the second USOE evaluation study supports the general conclusion that the Upward Bound program is effectively meeting its mandated objective to provide participants with the skills and motivation necessary for entry and success in education beyond the secondary school level.

Robert L. Green (1969) notes that the trend toward recruitment of black and non-traditional students represent a dilemna for colleges and universities.

As colleges and universities seek to recruit this new clientele, the traditional admissions criteria must be called into question. Green contends that the traditional measures of admissions, the SAT and ACT exams, are not good predictors for economically disadvantaged youth. He further contends that high school grades continue to be the best single prediction criterion of college achievement.

Green (1969) believes that "high risk" students who do not meet traditional academic admissions criteria can still survive college if proper tutorial assistance is provided. He recommends providing 1)summer preparatory programs; 2) tutorial assistance; 3) special courses; and 4) vocational and personal counseling. Green feels that the traditional academic standards of the university will not be compromised upon admitting the non-traditional student. He maintains that colleges

and universities should adhere to traditional academic standards so that these students will be confident in their ability to achieve at a certain level.

Green recommends that colleges and universities should consider other factors in making admissions decisions such as motivational and positive attitudinal characteristics.

Centra (1980) notes that pressures for equality of educational opportunity have brought unprecedented numbers of blacks, women, and economically disadvantaged students into post-secondary education.

Enrollment projections for colleges and universities in the 1980s indicate a decline on the order of 10 percent for the traditional college-age cohort between the ages of 17 and 22. Centra suggests that this new clientele of adults, women, and minority group persons can help alleviate projected enrollment declines in the 1980s.

However, as Cross (1971) notes, our concern as educators with the non-traditional student must extend beyond the open door. Hodgkinson (1977) notes that all students in comtemporary higher education seem to be experiencing new problems and concerns in the realm of the traditional academic criteria.

Hodgkinson notes that 18 percent of college teachers feel that their students are underprepared for college academics. Thirty-three percent of the faculty surveyed in his study indicated that students are less well prepared in mathematics. Seventeen percent of science faculty members feel that students are less well prepared. These two areas do not seem to indicate much of a problem, according to this survey.

However, among reading skills, 45 percent of the faculty report that students are not well prepared. Concerning comprehension levels, 60 percent of college and university faculty are reporting student problems in academics. Hodgkinson notes that very few college faculty are trained to deal with these forms of academic concerns and therein lies a dilemna of higher education. His recommendation is that new faculties be employed who have competencies in developmental and remediation work.

In conclusion, Centra (1980) sets forth the following recommendation that adequately sums up this issue of equal opportunity access to higher education:

> Non-traditional students' retention rates, hence enrollment totals, might be best increased by improving the academic skills of students before attending college, and to a great extent, through remedial and developmental work in the early years of college.

Summary

This literature review focuses on: 1) the history of educational opportunity in America; 2) compensatory educational programs; 3) service delivery systems through these programs; 4) major research studies pertaining to the Upward Bound program; 5) instructional methodology; and 6) an emphasis on access to post-secondary education.

This literature review is intended as a theory chapter in this study. Its content will not be summarized in the concluding chapters of this paper.

CHAPTER III

METHODOLOGY

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METHODOLOGY

This study was undertaken to determine the extent of the educational development of Upward Bound participants exposed to an altered secondary education curricula. The focus of this study is on the achievement development of these students. This researcher intends to assess and measure the results of the educational processes employed in this compensatory program. This study focuses on both inputs and outputs of the Upward Bound educational process.

The purpose of this chapter is to: 1) present an overview of the research methods used in this study; 2) delineate the educational process; 3) describe the procedure and treatment of the subjects; 4) present a review of the instrumentation; 5) provide a description of the curriculum used in the summer component; 6) present the research questions; and 7) detail the statistical analyses used in the study.

Research methodology

The method of analysis and procedures utilized in this study is developmental research. One of the purposes of the developmental research model is to investigate patterns and sequences of growth and/or change as a function of time. (Isaac, 1971, p. 19).

This study utilizes a longitudinal growth design which is intended to measure the nature and rate of achievement in a population of secondary education level students at varying stages of academic development.

Research Model

The primary objective of this section is to present a brief outline of the educational process utilized in this particular Upward Bound program. This study will not attempt to overview the entire scope of Upward Bound projects; it will concentrate specifically on the summer in-residence academic component. In this study the summer component is designated as the treatment or dependent variable.

The Upward Bound project presented in this study is located in a Midwestern four-year leberal arts college. The host institution is selective in its admissions process. The academic environment of the institution is of high academic quality. It is hypothesized that the academic environment of this institution may have some impact on program participants and program structure. The Upward Bound project presented in this study has a fifteen year history.

The program under investigation is funded on a perennial basis; the majority of Upward Bound projects are essentially summer programs. This program under study consists of two components: 1) an academic year component which operates concurrently with the local school districts, and 2) the summer academic component which consists of the seven-week in residence educational program.

This study focuses specifically on the summer in-residence educational program. The assessment procedures used in this study and the academic achievement by the participants is measured specifically within the summer module. The summer educational program is seven weeks in duration and is operationalized from mid-June throughout the month of July on an annual basis.

Program participants

The participants in the program are selected from fourteen target schools in Northeast Iowa and Southwestern Minnesota. The Upward Bound target areas are standardized on a 50 mile radius of secondary schools located around the host institution. Student participants are recruited and recommended for the program by their respective high school guidance counselors. All participation in the project is voluntary and subject to parental permission.

Program participants must meet the economic guidelines established under the U.S. Office of Education formula; based on the poverty income levels established in the U.S. census. Economic guidelines are computed on the income levels of a family of four. No participant family reported in this study has an annual income exceeding $7,999.00.

The characterization of the typical Upward Bound student varies tremendously. The program is not intended to be race-specific or color-bound; only economic criteria are used to determine eligibility. Program participants range from academic underachievers; to students of average ability; to high ability students; as determined by standardized assessment instruments and participant's secondary school academic

records. Cross (1976) provides a caricature that best describes the typical Upward Bound participant as being the, "high ability sons and daughters of blue-collar workers."

The largest number of program participants should be selected at the sophomore level of secondary school, as recommended by U.S. Office of Education standards. Three years participation in the project is desirable to realize the maximum benefits of the program. Ninth grade students are considered atypical Upward Bound participants. A limited number of this level of student is admitted to the program due to maturational concerns. This particular project is designed to serve approximately 80 participants.

Curriculum

During the summer Upward Bound participants typically reside on a post-secondary campus for an intensive six-to-eight week session of courses, cultural and social events, and counseling. The intended outcomes of this educational process are expected to show measurable academic achievement on standardized assessment instruments.

The Upward Bound Program should utilize a non-graded altered curricula. (Buffie, 1971, Claydon, 1977) It is recommended that the summer curricula of the program vary from the standard curriculum models utilized in the area high schools. The structure of the curriculum utilized in this particular project is outlined in Figure 2.

Program participants in grades 9 through 11 are assigned to faculty-tutors and placed in core groups on a 3:1 ratio, but not to exceed four students. The intended purpose of the small number in

WEEKLY SCHEDULE

TIME BLOCKS	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SAT. & SUN.
BLOCK I (8:00-8:45)	Breakfast and Morning Assembly	Breakfast and Morning Assembly	Breakfast and Morning Assembly	Breakfast and Morning Assembly	Breakfast and Morning Assembly	Breakfast
BLOCK II (9:00-11:30)	Core Group Activities	Core Group Activities	Core Group Activities	Core Group Activities	Core Group Activities	WEEK-END PACKAGES
Lunch-Staff Mtg.	Staff Mtg.	Staff Mtg.	All Project Meeting 11:00-12:00	Staff Mtg.	Staff Mtg.	
BLOCK III (1:30-2:30)	Academic Classes	Academic Classes	Academic Classes	Academic Classes	FRIDAY SPECTACULAR	
BLOCK IV (3:00-5:00)	Para-Academic Classes	Para-Academic Classes	Para-Academic Classes	Para-Academic Classes		
Supper	Supper	Supper	Supper	Supper		
BLOCK V (7:00-9:00)	Recreation or Special Activity	Recreation or Special Activity	Recreation or Special Activity	Recreation or Special Activity		MOVIE

Figure 2. A Model of the Upward Bound Academic Curriculum Structure

academic core group is to maximize the effects of individualized instruction. (Mager, 1971) The faculty-tutors consist of the regular college faculty and selected certified instructors from the target schools. College-level student tutor-counselors are also utilized in areas of individualized instruction, peer counseling, recreational activities, and para-academic classes.

Performance contracting

Performance contracting is utilized as an educational method in this particular program. The intended purposes of performance contracting is based on the educational theories of mastery learning. (Bloom, 1971, Block, 1975, Bruner, 1962, 1966, Cross, 1976). The objective of performance contracting within the framework of the core group is to enable the student to plan and carry out an achievable, individual educational program of study.

To accomplish this task, the core group leader will:

1) review the students educational problem areas, using testing information, interests, and information on courses to be taken during the following school year.

2) help the student develop long-range educational goals.

Instrumentation

In order to assess the achievement development of Upward Bound participants and the intended program objectives, this program utilizes a pretest, posttesting design. Program participants are administered a pretest to assess academic proficiencies before attending the summer program. The purpose of the pretest is to assess the strengths and

weaknesses in basic skill areas of each individual student. As a result of this information the program participants are assigned to appropriate skill areas and faculty-tutors who specialize in certain subject matter in which the student will need development or remedial work. At the end of the summer program the posttest is then administered to determine the degree of academic development or achievement.

Review: California Achievement Tests

This project utilizes the California Achievement Tests (CAT) 1977 series at level 19; grades 9 through 12. The CAT/1977 series is a total battery of norm-referenced tests. This testing battery also offers a criterion-referenced format for purposes of individual assessment. The CAT/1977 series offers a Form CAT/C; pretest and Form CAT/D posttest design.

The California Achievement Tests were developed in 1933 and have been available for over 45 years. (Buros, 1978) The most recent norms for the tests were established in 1977. The recommended testing time for the CAT/1977 series is approximately four-and-one-half hours; it is recommended to administer the test on two separate occasions.

The exam is designed fundamentally to measure basic skills in the 3 Rs. (Buros, 1961, 1978) The CAT/1977 series can be hand scored or machine scored. Computerized scoring will yield sections on derived mastery objectives for use in individualized assessment. An extensive item analysis for each individual is also provided.

No sciences or social studies are measured by this exam. The CAT/1977 modules are culture-free and delineate a multi-cultural

non-sexist approach to the educational process. Minority children are depicted in the battery and represent approximately 15 percent of the standardization sample. The ceiling of this exam at level 19 is a grade equivalent of 12.9 years. This achievement battery is considered a well-developed assessment instrument by educational standards. (Buros, 1961, 1978, Mehrens, 1975)

Research Questions

The research questions to be examined through this research study are: 1) is the program meeting its intended academic objectives; 2) are there any measurable indices of achievement development among the program participants; 3) is the achievement development significant; 4) what are the longitudinal effects and outcomes of participation in the program; and 5) do the outcomes warrant continuation of these compensatory educational programs.

Statistical Analyses

The data presented in this study has been computed on the T-test for dependent samples or matched pairs. (Roscoe, 1969) The data presented in this study has been tested at an alpha level of .05, on a two-tailed T-test. The interval of confidence for the statistical analyses presented in the study is 95 percent. The total sample size for the participants reported in this study at grades 9 through 11 has an N of 56 cases, and 55 degrees of freedom. The data analyzed in this study is based on parametric statistical methods. The data has been

processed through the Statistical Package for Social Sciences (SPSS) to reduce the probability of type I and type II errors in computation.

Summary

Participants in the Upward Bound program are examined at their respective grade levels 9 through 11. Twelfth grade students are not administered the CAT/1977 battery. Upward Bound is intended as a college preparatory program. Therefore, senior level students are encouraged to take the standardized admissions assessments; such as the American College Test (ACT) or the Scholastic Aptitude Test (SAT).

A limitation of this study is that, unlike the Research Triangle Evaluation, which utilizes a control group of non-participants vs. participants, this study does not include a non-participant group due to limitations in its scope.

CHAPTER IV

ANALYSIS AND EVALUATION

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ANALYSIS AND EVALUATION

This chapter will present the data collected for this study. Interpretation and a discussion of the results will follow.

The purposes and objectives of this chapter are to: 1) define the terminology used in the analytical portion of the study; 2) analyze and evaluate the results of the research findings; 3) present tables and graphs of data; 4)discuss the findings of the research data for the three grade levels 9, 10, and 11; 5) assess the levels of academic achievement of the total program and its participants; 6) ascertain any significant degree of student academic development between testings; and 7) present the results of a one-year follow-up survey of former Upward Bound participants on a longitudinal basis.

This study will attempt to analyze the findings of the data at four levels:

1). The primary focus is to assess the degree of change in academic achievement from the pretest, to treatment (i.e. summer academic component) to the posttest on the CAT Battery level 19 C and D.

2). The participants of this particular program will be compared against their appropriate national standardization sample at the respective grade levels.

3). The participants will be assessed in terms of academic development by comparing obtained norm-referenced achievement scores and contrasted to the CAT Battery Achievement Development Scale Score Test Standardization Mean of 600 at level 19 of forms C and D.

4). Normal curve equivalents will be used to determine the degree of growth and progress in achievement development from pretest to posttest for the participants reported in this study.

Definition of terms

The basic score for CAT C and D is the raw score. This score is simply the total number of correct responses in any scored unit. By converting the raw scores, normal curve equivalents, achievement development scale scores, stanine scores, and grade equivalents, may be obtained.

The data reported in this study has converted the raw scores, or total number of correctly answered items in all units, to the corresponding achievement development scale score(s). The ADSS is predicated upon Thurstone's absolute scaling for interval units. (Gulliksen, 1950, pp. 284-86). Scale score provides a continuous variable for measurement of academic growth across all grade levels. Scale scores are the most appropriate units of measurement and statistical analysis for this study. The following definitions from the CAT Technical Bulletin #1; (1979) will detail the intended uses and purposes of the interval units of achievement development scale scores and normal curve equivalents;

Scale scores are produced from a single, equal interval scale of scores across all grades for use with all levels of CAT C and D. The scale is expressed in three digit numbers ranging from .000 to 999. CAT Level 19, C and D have an ADSS mean anchored at 600.

One characteristic of scale scores is that they are independent of test level or form, grade and time of year of testing. Another is that the difference between any two successive scores on the scale is always the same. Scale scores are used primarily for charting growth and trends of development in achievement for school systems and other groups. ADSS units are applicable to both graded and non-graded curricula and have the following advantages;

1) Scale scores can be added, subtracted, and averaged across test levels. Such computations make it possible to directly compare individuals, classes, schools, or entire districts.

2) Scale scores facilitate longitudinal studies of achievement growth over any period of time for an individual or group.

Normal Curve Equivalents

Normal curve equivalents (NCE) have many of the characteristics of precentile ranks but have the additional advantage of being based on an equal-interval scale. The normal curve is presented on a scale of 1 - to - 99.9. At level 19, CAT C and D the anchored mean is an ADSS score of 600, this represents the 50th percentile. The standard deviation of level 19, C and D is 100. All common linear transformations presented by NCE's in this study will be based on the Z-Scale standard scores. Computations reported on such a scale from pretest to posttest will be based on the CAT level 19, ADSS of 600/100 S.D. and the Z-Scale. (Roscoe, 1969, pp. 54-55).

Grade equivalents and stanine scores will not be used in this study. Scholars of educational measurement and evaluation warn against the use of grade equivalents in particular beyond primary school levels, K - 6th. (Cronbach, 1970; Isaacs, 1971; Ahman, 1975). The theory and reasoning behind eliminating grade equivalents as units of achievement lies in the fact that instruction in basic skills are spurious, discontinuous, and inconsistent across school systems and beyond grade level 6. Grade equivalents are therefore not an appropriate measure of academic progress and achievement at middle school (7-9) and secondary school (9-12) levels.

Findings

This section will attempt to analyze the results of the testing program across grade levels 9, 10, 11 and present a total program summary of the findings.

We are reminded that ninth grade students are generally considered atypical Upward Bound participants. This study has a sample size of four individuals in the ninth grade class. Therefore, it is determined that averages or mean scores and standard deviation units of measurement are not appropriate measures for such a small cohort.

The results as shown in Table 1 indicate that, as a cohort, the four participants are a highly able group of students academically. On the dimension of total reading these participants had a pretest (CAT/C) mean ADSS of 588.2 and a posttest mean (CAT/D) of 612.7. This is a significant gain in achievement at t - .05 (two-tailed) level of significance. These participants progressed from a normal curve

Table 1

Scale Score Means, Standard Deviations, Standard Errors of Measurement and T-Values for Level 19 CAT C and D results for the 9th Grade Class

		Level 19 CAT/C				Level 19 CAT/D					
Normed Section	N=4	Mean	SD	SEM	r	Mean	SD	SEM	T-Value	D.F.	2 tail prob..
Reading Vocabulary		591.2	74.3	37.1	.94	587.5	81.6	40.8	0.29	3	.791
Reading Comprehension		580.0	18.1	9.0	.84	622.2	32.7	16.3	-4.23	3	.024
TOTAL READING		588.2	39.5	19.7	.90	612.7	39.5	19.7	-2.91	3	.062
Spelling		584.5	75.6	37.8	.14	579.0	42.4	21.2	0.14	3	.901
Language Expression		568.5	35.4	17.7	.22	577.7	12.9	6.4	-0.53	3	.633
Language Mechanics		565.7	35.2	17.6	.80	575.2	104.8	52.4	-0.24	3	.826
TOTAL LANGUAGE		564.7	13.6	6.8	.40	575.0	60.5	30.2	-0.36	3	.741
Mathematics Computation		615.2	45.3	22.6	.55	625.0	61.1	30.5	-0.38	3	.732
Mathematics Concepts and Applications		624.0	74.0	37.0	.98	607.7	87.4	43.7	1.60	3	.209
TOTAL MATHEMATICS		620.0	58.5	29.2	.88	619.0	73.1	36.5	0.06	3	.957
TOTAL BATTERY		593.2	40.7	20.3	.89	602.0	56.8	28.4	-0.64	3	.568

$p < .05$

equivalent (NCE) in the 39th percentile to a NCE in the 54th percentile. It is also noted that both the pretest and posttest mean scores in reading for this group are well above their national standardization sample group ADSS Unit of 574.0.

There were no significant gains across all the other areas of the CAT Battery for this cohort (Table 1). For the total Battery this cohort had a pretest mean ADSS of 593.2 and a posttest mean ADSS unit of 602.0. This cohort progresses from a NCE in the 47th percentile to the 51 percentile. The national standardization sample mean ADSS unit for 9th grade students in 574.0. Although small in number at four, the ninth grade class reported in Table 1 shows relatively high capability in academic skills and achievement.

The sophomore class in most Upward Bound programs is optimally where the participants should be admitted to a program. In this study the recruited 10th grade class of summer 1978 represents a sample size of (N=) 21 participants.

The results reported in Table 2 will indicate that this cohort made no significant gains in academic development from pretest to posttest in the areas of reading through spelling. This cohort is also below their national standardization sample in these areas. Significant gains in achievement were made by this group in the language arts areas from pretest to posttest. However, with a total language posttest ADSS unit of 591.3 mean, this group is still scoring below their counterparts in the national standardization sample. The 591.3 mean score (posttest) is also below the CAT C and D anchored ADSS mean of

Table 2

Scale Score Means, Standard Deviations, Standard Errors of Measurement and T-Values for Level 19 CAT C and D results for the 10th Grade Class

	Level 19 CAT/C				Level 19 CAT/D					
Normed Section	N=21 Mean	SD	SEM	r	Mean	SD	SEM	T-Value	D.F.	2 tail prob..
Reading Vocabulary	569.9	58.5	12.7	.66	576.0	86.3	18.8	-0.43	20	.670
Reading Comprehension	575.0	62.3	13.6	.55	574.5	66.5	14.5	0.04	20	.972
TOTAL READING	573.5	57.6	12.5	.67	573.3	74.7	16.3	0.01	20	.991
Spelling	576.3	83.2	18.1	.29	585.7	71.1	15.5	-0.46	20	.649
Language Expression	563.6	63.5	13.8	.68	584.3	75.5	16.4	-1.67	20	.110
Language Mechanics	565.1	64.4	14.1	.78	598.1	63.7	13.9	-3.61	20	.002
TOTAL LANGUAGE	563.4	61.1	13.3	.78	591.3	66.3	14.4	-3.02	20	.007
Mathematics Computation	562.4	47.0	10.2	.80	589.3	49.7	10.8	-4.06	20	.001
Mathematics Concepts and Applications	563.2	55.6	12.1	.75	565.7	58.0	12.6	-0.28	20	.781
TOTAL MATHEMATICS	562.2	48.8	10.6	.85	577.3	48.7	10.6	-2.62	20	.016
TOTAL BATTERY	563.4	55.8	12.1	.81	576.2	59.4	12.9	-1.64	20	.116

$p < .05$

600. This cohort progressed from a NCE in the 37th percentile to the 49th percentile in language arts from pretest to posttest. These gains were significant at t .05, two-tailed.

The 10th grade class achieved significant development in total math scores across CAT/C and D. Again, although the gain is significant from pretest to posttest, this cohort is still slightly below their national standardization ADSS mean score(s) of 594 in math skills. This group of program participants progressed from a NCE in the 36th percentile to a NCE in the 43rd percentile in quantitative achievement.

The degree of development from pretest total battery scores and the posttest score is non-significant at t - .05, two-tailed (20 d.f.). As a group, this 10th grade grade cohort has a total ADSS mean score of 576.2 on CAT/D. The national standardization sample mean score is an ADSS of 599.0 as a total for 10th graders. Both groups score below the anchored CAT Battery ADSS mean score of 600. This 10th grade class reported in this study has a total NCE located in the 42nd percentile.

The 11th grade class reported in this study shows a significantly different academic profile in comparison to the sophomore level class. The sample size for the 11th grade class reported in this study has (N=) 31 participants.

It might be first noted through Table 3, that this cohort scored at or above the anchored (CAT-77) ADSS mean of 600 across all academic skill areas. While both pretest and posttest ADSS mean scores are relatively high, this group scored significant gains in the areas of spelling, language arts, total mathematics, and across the total battery.

Table 3

Scale Score Means, Standard Deviation, Standard Errors of Measurement and T-Values for Level 19 CAT C and D results for the 11th Grade Class

		Level 19 CAT/C				Level 19 CAT/D					
Normed Section	N=31	Mean	SD	SEM	r	Mean	SD	SEM	T-Value	D.F.	2 tail prob..
Reading Vocabulary		617.2	86.1	15.4	.77	629.7	77.6	13.9	-1.26	30	.217
Reading Comprehension		622.7	72.2	12.9	.65	617.8	65.1	11.6	0.47	30	.640
TOTAL READING		620.1	76.4	13.7	.77	626.5	65.6	11.7	-0.74	30	.466
Spelling		607.1	82.1	14.7	.59	632.5	84.4	15.1	-1.90	30	.068
Language Expression		594.1	79.3	14.2	.80	615.3	64.7	11.6	-2.54	30	.017
Language Mechanics		615.4	66.1	11.8	.75	614.7	58.5	10.5	0.09	30	.929
TOTAL LANGUAGE		605.7	71.9	12.9	.85	616.5	60.8	10.9	-1.59	30	.123
Mathematics Computation		591.1	72.3	13.0	.77	611.1	70.6	12.6	-2.31	30	.028
Mathematics Concepts and Applications		597.8	62.5	11.2	.80	608.5	78.5	14.1	-1.27	30	.213
TOTAL MATHEMATICS		593.7	63.4	11.3	.84	612.1	72.2	12.9	-2.60	30	.014
TOTAL BATTERY		604.0	66.6	11.9	.88	618.4	67.6	12.1	-2.46	30	.020

$p < .05$

The mean ADSS for the junior class on the pretest was 604.0 for the total battery. The total battery posttest ADSS mean was 618.4 for this group. This represents a very significant gain from pretest to posttest at the t - .05, two tailed (30 d.f.) confidence interval. The national standardization sample cohort for 11th grade students has an ADSS mean of 612.0. The 11th grade participants reported in this study progressed from a NCE unit score in the 51 percentile to an NCE unit score in the 58 percentile.

The results reported in Table 4 for the total battery represent the averages of ADSS units for all participants across all academic areas for all students in the 1978 summer program. The total population size of this cohort, grades 9 through 11, has a total of (N=) 56 cases.

The program participants total scores across the three areas of reading were non-significant from pretest to posttest. However, as the data in Table 4 indicates, the total reading score on the posttest (CAT/D) has an ADSS unit mean score of 605.6. All program totals in the areas of reading are above the CAT-1977 anchored ADSS mean of 600. As a total cohort, these participants progressed from an NCE unit on the 50 percentile to the 52 percentile in total reading achievement.

There are no significant gains reported in the area of spelling in the total program ADSS from pretest to posttest as shown in Table 4. However, it should be noted that the total program showed a gain in academic development progressing from an NCE in the 47 percentile to an NCE in the 54 percentile, moving above the CAT anchored mean ADSS score of 600 which represents the 50 percentile standard score.

Table 4

Scale Score Means, Standard Deviations, Standard Errors of Measurement and T-Values for Level 19 CAT C and D Combined Scores for the Total Program

Normed Section N=56	Mean	SD	SEM	r	Mean	SD	SEM	T-Value	D.F.	2 tail prob..
Reading Vocabulary	597.6	78.1	10.4	.75	606.5	83.9	11.2	-1.18	55	.245
Reading Comprehension	601.8	69.5	9.2	.64	601.9	66.6	8.9	-0.02	55	.985
TOTAL READING	600.3	70.6	9.4	.75	605.6	71.5	9.5	-0.79	55	.432
Spelling	593.9	82.0	10.9	.49	611.1	80.1	10.6	-1.58	55	.119
Language Expression	580.8	72.1	9.6	.75	601.1	68.1	10.0	-3.07	55	.003
Language Mechanics	593.0	67.8	9.1	.73	605.6	63.9	8.5	-1.97	55	.054
TOTAL LANGUAGE	586.9	68.1	9.1	.80	604.1	63.4	8.4	-3.14	55	.003
Mathematics Computation	582.1	63.6	8.5	.77	603.9	62.9	8.4	-3.88	55	.000
Mathematics Concepts and Applications	586.7	62.7	8.3	.81	592.4	73.7	9.8	-0.99	55	.327
TOTAL MATHEMATICS	583.8	59.7	7.9	.85	599.5	65.6	8.7	-3.43	55	.001
TOTAL BATTERY	588.0	63.4	8.4	.87	601.4	66.1	8.8	-3.04	55	.004

$p < .05$

In total program language arts skills, the gains from pretest to posttest were significant, at t - .05, two tailed, (55 d.f.) with a total posttest mean ADSS unit of 604. This cohort (total) has an NCE unit in the 52 percentile.

Significant gains in total program academic achievement were also made in the total mathematics areas. For the total program these quantitative scores did not progress above the CAT-77 anchored mean of 600 as indicated in Table 4. However, significant achievement is indicated for the total group from pretest to posttest. On the whole, the achievement levels in quantitative skills for the total program has an NCE that represents the 50th percentile and above the national standardization averages of scores.

The total ADSS unit, for all program participants across the total CAT Battery C and D, indicates significant achievement of t, .05, two-tailed, (55 d.f.). The total ADSS mean unit score on the pretest was 588.0, with a standard deviation of 63.4, and a NCE located in the 45th percentile. The posttest total battery ADSS mean unit score is 601.4, with a standard deviation of 66.0, and a final NCE located in the 52nd percentile.

Discussion

This section will attempt to explain the findings presented in the previous section. General conclusions pertaining to the study and their implications for further research will be presented in the final chapter.

The research data has yielded some interesting information. The

relatively small 9th grade cohort consisting of four individuals indicates that these students possess relatively high academic strengths in the mathematics areas and basic proficiencies in other verbal communication skills. However, these younger students do show a need for continued development in verbal skill areas. As previously mentioned, as an aggregate unit this 9th grade cohort is well above their national standardization sample of similar students in their overall academic aptitude and achievement development.

The sophomore class presents a group of students which appear to need both remedial and developmental academic work. It should be restated that the largest Upward Bound recruiting class or new students should enter the program at the 10th grade level. Academic problems are thus expected from this cohort.

As an aggregate unit, the sophomore class requires academic development across all areas of verbal and quantitative skills. Significant gains were made in achievement in language arts areas and mathematics skills from pretest to posttest. However, as a group the 10th grade cohort falls below their national standardization counterparts on the CAT Battery.

Noting that this 10th grade class of Upward Bound participants show many academic weaknesses the program will provide reports of the academic assessment for each individual student to be submitted to their respective high schools in the 1978-79 school year. It is hoped that enhanced academic work during the school year academic tutoring

component of the Upward Bound program will strengthen these academic weaknesses.

As the data in Table 3 indicates the 11th grade aggregate unit is highly competitive academically when compared and contrasted to their respective national standardization cohort of similar students. The results of the pretest as reported in Table 3 will indicate what Bowen (1978) refers to as the "ceiling effect." As a total aggregate these students scored reasonably high on the pretest with an ADSS mean of 604.0. Significant gains in achievement is not expected on the posttest due to the ceiling of the CAT Battery which is 12.9 years. Many of these 11th grade participants scored well on both the pretest and posttest. Participants in this 11th grade cohort do reasonably well in the quantitative skills, as significant gains across all math areas are indicated from the results of this testing.

One assessment of the relatively strong academic showing for this group of 11th graders lies in the fact that the particular program reported in this study has a low attrition rate from year to year. The vast majority of the 31 participants reported in the junior level cohort were sophomore participants in the Upward Bound program.

Data preceding the 1977-78 school year will not be used to ascertain academic achievement for 11th grade students. Due to the fact that the CAT Battery was not used for this program prior to 1978. The CAT Battery was instituted as the assessment device for this particular program in 1978. Therefore, all successive testing and data beyond the 1978 program will be used on a longitudinal basis to determine achievement development.

The total program aggregate scores yield(s) comprehensive information on the intended objectives and outcomes of the Upward Bound program and its educational process.

For the program as a whole the data indicates no significant gains in academic achievement in the communication skills of reading and spelling. However, a ceiling effect appears to be a confounding variable in the interpretation of the data presented in Table 4.

As an aggregate unit the total program results indicate significant achievement across the language arts areas. All final aggregate scores are above the anchored ADSS mean score of 600. In sum, the program totals indicate mixed results in the overall achievement in verbal skills, although all posttest scores as reported in Table 4 are located above the ADSS mean score of 600.

As a total program, the study indicates that significant gains in achievement development were made across the quantitative skill areas. This is a positive outcome. The typical Upward Bound student is generally academically deficient in both math and science skills. Continued development is an intended goal for these students in quantitative skills.

Perhaps most pleasing are the results which indicate significant achievement development among the total aggregate unit for the program. The primary importance of this statistic lies in its value for evaluation of the effectiveness of the Upward Bound program.

It should be reported that the Kuder-Richardson formula (KR-20) for the CAT/C and D Battery has an r of .88 for a six month testing

interval. The testing reported in this study was conducted at a four month interval from April through July. The reported r value of the total battery reported in this study is .87, which is significant at the .05 level.

Summary

The previous results are indicative of norm-referenced assessment. The CAT Battery is also very valuable as an individualized criterion-referenced achievement battery.

The program under study utilizes the results of the assessment for diagnostic purposes and individualized instruction. The CAT Battery reports yields an individual profile of derived mastery objectives in skill areas for each individual student. An item analysis is also provided for each student cataloging responses in each particular assessment area. On the basis of the results of the pretesting (CAT/C) students are placed in appropriate academic skill sessions and areas where the academic needs are greatest. For instance, participants scoring below average in verbal skills areas are placed in reading and study skills labs and assigned to faculty-tutors who specialize in language arts. Participants showing weaknesses in quantitative skills will also be assigned to appropriate remedial academic work.

Aggregate numbers, mean scores, and total program results are deemed as relevant, but for purposes of evaluation and government reporting more specifically. Individualized learning and assessment is a more appropriate measure of academic development in Upward Bound

participants. However, it is beyond the scope of this particular study to assess each individual student's academic profile.

In sum, on the basis of the results obtained from this study, we may conclude that we are 95 percent confident that the reported program is meeting its intended goals and objectives. More specific conclusions will be stated in the final chapter of this study.

A One-Year Follow-Up Survey

In the fall of the 1979-80 academic year a follow-up survey was conducted on the junior level participants as reported in Table 3 of this study. The 11th grade participants reported in Table 3 were 12th graders during the 1978-79 school year. The objectives of this follow-up survey were to: a) conduct a post-secondary placement survey, b) follow-up on former participants post-high school plans, and c) provide a prediction model on post-secondary persistence of former Upward Bound participants.

The purposes of this section are to: 1) present the results of the American College Assessment scores for Upward Bound participants, 2) provide a brief overview of the Upward Bound College Preparatory Program and its functions, and 3) set forth the model for evaluating persistence, placement, and educational outcomes of the Upward Bound program.

During the 1978-79 academic school year the junior level participants described in Table 3 of this study were at the 12th grade level. As a program policy, all senior level participants in the Upward Bound program are strongly encouraged to make positive overtures toward

post-secondary education. A policy of this particular program requires that all senior level participants take the standardized admissions assessments such as the American College Test (ACT) or the Scholastic Aptitude Test (SAT). The program reported in this study is based in the Midwestern region of the United States, therefore the ACT is recommended.

Definition of terms

ACT Composite Score

For purposes of this survey only the ACT-Composite score will be used. The ACT-C is derived from four subscores received by students on the American College Assessment. (ACTP, 1973) An ACT-C of 16 is the approximate median score of national samples of high school seniors, the approximate mean score is 18.6, with a standard deviation of 5.8.

The students reported in this survey represent 34 Upward Bound seniors. Approximately three students are added to the original 31 participants reported in Table 3 due to the fact that these 3 students will be graduating from high school ahead of their class of 1980. Therefore, this N of 34 is still the representative sample of participants reported in Table 3 of this study.

As noted in Table 5 the participants in this program received a mean ACT-C score of 17.47, with a variance of 33.11, a standard deviation of 5.7, and a range of 19. The ACT-C high school grade norm for students with family incomes between $3,000. and $7,999. is 16.6 nationally with a standard deviation of 5.9. (ACTP, 1976, pp. 64-65) The aggregate scores on the ACT-C for the senior students reported in

this study indicates that this group scored higher than the 16.0 median ACT-C score, higher than their national standardization counterparts at 16.6 ACT-C, but below the ACT-C college-bound mean score of 18.6.

Among their income level counterparts, the Upward Bound participants reported in this study scored an ACT-C in the 55th percentile. Among the general college-bound cohort, these Upward Bound participants ACT-C score of 17.47 places them in the 46th percentile nationally. An ACT-C score of 17.47 transforms to an average SAT V-Q combined score of approximately 820. (Astin, 1971)

The data presented in Table 5 will indicate that 33 of 34 program participants completed secondary education. This represents a success rate of 98 percent for this program. Twenty-six of the thirty-four participants reported in this survey were enrolled full-time in a post-secondary institution in the fall of 1979. This represents a post-secondary placement rate of 77 percent.

The College Preparatory Program

During the summer of 1979 the graduated seniors of the Upward Bound program enroll in a six-week college preparatory program. This "bridge" program operates concurrently with the Upward Bound program. Only students who are admitted to a post-secondary institution participate in the college preparatory component. All participation is voluntary.

The college preparatory program is a six-week intensive English course which emphasizes composition and writing skills. This is a

standard college-level English course. Upon completion of the course requirements the participants will receive a letter grade and four units of college credit. These credits are fully transferable to any post-secondary institution that is fully accredited by the North Central Association of colleges and universities.

Summary

All former program participants are included in follow-up surveys for two years after graduation from secondary education. Results of the first year of the 1979-80 survey is detailed in Table 5 of this report. Student identity will not be used in this survey. The sex of the student, the ACT-C score, post-secondary plans, institution type attended, and percent ACT-C in freshman class is used for prediction purposes. Astin (1971) suggests that it may be important to ascertain the position of a particular student in their respective freshman class at a particular school to predict persistence. As a general rule, students whose college board scores place them in the lowest 15 percent of their freshman class are encouraged to attend institutions that provide academic support programs. This is particularly important to the non-traditional students in post-secondary education.

Table 5

Data on the One Year Follow-Up Survey for the 1978-79 Senior Class with ACT-Composite Scores, Post-High School Plans, Post-Secondary Institutions, and Percentile Ranks of Entering Freshman Class by ACT-C Scores

Pupil Number	Sex	ACT-C	Post-High School Plans	Post-Secondary Institution	Post-Secondary Institution Type	Percentile Fresh-Class
001	M	10	PSE	Ia. Western C.C.	Community College	8%
002	F	11	PSE	Kirkwood C.C.	Voc - Tech	N/A
003	F	20	PSE	Univ. of Iowa	4-yr. Ph.D.	8%
004	F	18	PSE	G. Valley-Lutheran	2-yr. College	46%
005	F	28	PSE	Luther College	4-yr. Lib. Arts	98%
006	F	21	PSE	Young's School Beauty	Voc - Tech	N/A
007	F	13	PSE	Central College	4-yr. Lib. Arts	1%
008	F	10	PSE	Hawkeye Tech	Voc - Tech	N/A
009	M	18	PSE	Texas, Jr. C.	Community College	N/A
010	M	29	PSE	Cornell Coll, Ia.	4-yr. Lib. Arts	86%
011	F	19	PSE	W. Wisc. Tech.	2-yr. Voc. Tech.	N/A
012	M	12	U.S. Army	N/A	N/A	N/A
013	M	12	PSE	Luther College	4-yr. Lib. Arts	1%
014	M	10	PSE	N.I.A.C.C.	2-yr. Comm. College	2%
015	F	14	PSE	Univ. No. Ia.	4-yr. M.A.	1%
016	M	18	Employment	N/A	N/A	N/A
017	M	20	U.S. Navy	N/A	N/A	N/A
018	F	11	PSE	Rochester C.C.	2-yr. Comm. College	5%
019	M	21	PSE	Texas, Jr. College	Community College	N/A
020	F	27	PSE	Buena Vista Coll.	4-yr. Lib. Arts	96%
021	M	12	U.S. Army	N/A	N/A	N/A

Table 5 (cont'd)

Pupil Number	Sex	ACT-C	Post-High School Plans	Post-Secondary Institution	Post-Secondary Institution Type	Percentile Fresh-Class
022	F	18	PSE	W. Minn. Tech. C.	2-yr. Voc-Tech	N/A
023	F	19	PSE	Simpson College	4-yr. Lib. Arts	1%
024	F	11	Employment	N/A	N/A	N/A
025	M	13	PSE	Arizona, Jr. C.	2-yr. Comm. College	N/A
026	M	10	PSE	Luther College	4-yr. Lib. Arts	1%
027	F	10	U.S. Army	N/A	N/A	N/A
028	F	17	PSE	Luther College	4-yr. Lib. Arts	2%
029	F	18	PSE	Bethany Lutheran	2-yr. Comm. College	33%
030	F	25	Employment	N/A	N/A	N/A
031	M	26	PSE	Luther College	4-yr. Lib. Arts	75%
032	M	27	PSE	Luther College	4-yr. Lib. Arts	80%
033	M	26	PSE	Ia. State Univ.	4-yr. Ph.D.	65%
034	M	20	U.S. Army	N/A	N/A	N/A
N=	34					
Sum		594				

$\bar{x} = 17.47 \quad \sigma^2 = 33.11 \quad \sigma = 5.7$

N/A = Not Applicable PSE = Post-Secondary Education

CHAPTER V

SUMMARY, CONCLUSIONS AND IMPLICATIONS

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SUMMARY, CONCLUSIONS AND IMPLICATIONS

Summary

This study has focused on the academic development and educational achievement of participants in a Midwestern Upward Bound project. The study is intended to be longitudinal in scope as it traces the patterns of academic achievement throughout secondary education of participants in the Upward Bound project over an extended period of time.

The Upward Bound participants included in this study are secondary level clientele, grades 9 through 11. Grade twelve students participate in a summer college preparatory program sponsored through the Upward Bound program. Participation in the academic year, and summer Upward Bound experience focuses on upgrading of basic skills in the 3 Rs. The problem under investigation throughout this study centers on whether the participants in the Upward Bound program collectively demonstrated significant gains in educational achievement as a direct result of participation in the program.

A second major focus of the study concerned the school input factors of facilities, quality of the educational process, individualized instruction, and expenditures for compensatory educational programs. These factors when taken in total are said to have been a significant determinant in the success of the program and its participants in terms of academic development.

Conclusions

On the basis of the research findings reported in this study, it may be concluded that this program has been successful in meeting its intended goals and objectives. The educational objectives and outcomes under investigation in this study consisted of the degree of academic achievement, persistence in secondary education, graduation, and students aspiring to, and gaining admission to, post-secondary institutions.

The conclusions for which this study suggests are that Upward Bound programs sponsored under the United States Office of Education are meeting their intended purposes and goals successfully.

Implications for Practice and Research

There is still much work that needs to be done in regard to education for economically disadvantaged persons in the United States. Sprinthall (1980) recommends that the process of student development be extended into the secondary levels of education through curriculum articulation. The Deliberate Psychological Education model is one means of applying the processes of human development, counseling functions, and new learning models to secondary school level clientele.

Concerning the special needs culturally diverse students in the secondary curriculum, Exum (1979) has adapted the deliberate psychological education theories to encompass a Black Identity Facilitation (BIF) model. This model, when applied to culturally diverse students at the secondary level, facilitates and promotes positive self

concepts, identity formation, and new learning strategies for these particular students.

Cross (1976) recommends that educators begin to restructure the curriculum to meet the needs of "new" learners who have come to post-secondary education in the decade of the 1970s. Cross contends that the traditional curriculum has failed to adequately develop the talents of culturally diverse students and children of working-class families. Reshaping the curriculum to meet the learning needs of these students is the challenge set before educators in the 1980s.

Through the excellent work now being undertaken in the nation's community colleges and vocational institutions new innovations in learning theory and methods are now being applied successfully to the needs of the non-traditional student.

This study is intentionally an open-ended model in its research design. The purpose for this study is to make available reference material for further evaluative studies on the Upward Bound program. Data on the 1979 and 1980 summer academic components of the program reported in this study is available. Inclusion of such data will ultimately extend the longitudinal scope of this particular study.

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